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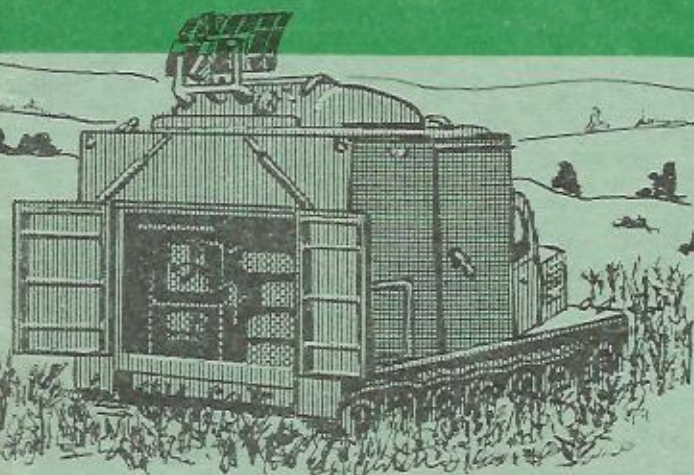


ARMY TECHNICAL INTELLIGENCE REVIEW

87



OCTOBER 1967



Nº87

SECRET

PART 2

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ARMY TECHNICAL INTELLIGENCE REVIEW No. 87 - PART II

OCTOBER 1967

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SECRET

FOREWORD

As foreshadowed in the Army Technical Intelligence Review No. 86 this publication now appears in its new guise for the first time and with a wider circulation. There is little to add to what was said before and we eagerly await the criticisms of our "users".

The editorial committee, which now looks at all contributions from desks, while striving for reasonable uniformity of presentation, is also trying not to fit a straight-jacket round everything. In addition we are aiming at making the 'Review' easier to read.

Changes in the Branch in the last 3 months are as follows:-

- a. Major Brian Thorsteinson, RCA has returned to Canada and the Radar Desk is now manned by Capt. Joe Jascewsky, US Army, on transfer from the MT Desk.
- b. Major Dick Patterson, RHR of Canada, has joined us from the Pakistan Staff College and has taken over the MT Desk.
- c. Major John Young, RA, has been replaced at the Arty Desk by Major Ian Harpur.
- d. As a result of a visit to DSTI by the Staff Inspectors we shall probably be losing one officer and will have to plug the gap by a reallocation of duties and a reduction in analysis in some fields.

We cannot conclude without reference to the short, sharp conflict between Israel and the Arabs. As you will have seen in your newspapers, a considerable amount of Soviet bloc equipment was left lying around and by now the Israelis must know a great deal about many Soviet weapons.



Colonel G.S.
DI Tech Int (A)



For a few short weeks in June of this year the entire world was forced to turn their attention from economic crises, droughts and even the war in Vietnam. In the heat of the Middle East the Arabs and Israelis were again preparing for a war. The war came, and after sixty hours of desert warfare, major actions were halted and again a tenuous ceasefire has settled over the Middle East.

Prior to, and during the war the attention of the intelligence organisations was primarily concerned with the political, strategic and tactical events. It is now the time to glean the lessons to be learned from this war. For Technical Intelligence this has been a war filled with potential gains. It can truly be referred to as sixty hours of opportunity.

Of the major Arab combatants both Egypt and Syria were equipped and trained by the USSR and to a lesser degree by Czechoslovakia. The Arabs in their stunning defeat were forced to leave in their wake vast quantities of all types of military hardware. These range from the infantry soldier's basic weapon to Surface to Air Missiles. The summary of the position of each of the desk officers will follow my remarks.

Although some technical data and photographs have been dispatched by our harried collectors in the Middle East, detailed evaluations are still a thing of the future. We now have an opportunity to compare the performance of Western weapons against those of the Warsaw Pact countries.

We are planning to make full use of this golden chance to see how good our analytical techniques are and where they could be improved.

(A.D. NELSON)



INFANTRY

Available photographs of infantry weapons used against the Israelis confirm the currently accepted view that only obsolescent Soviet Bloc infantry weapons have been supplied to the UAR. These include the Assault Rifle Kalashnikov (AK) the sub-machine gun Sudayev (PPS M1943) and the light machine gun Degtyarev DPM. In the infantry anti-tank field it would seem that the UAR had singularly little success. It is not yet known whether this was due to human or weapon deficiencies. However, it is anticipated that the UAR will now expect to receive the current in-service Soviet Bloc RPG-7 Anti-Tank Grenade Launcher in lieu of the out-dated RPG-2.

ARMOUR

The Israeli army used their armour to good effect. Information received indicates that, where Centurions came up against T-54/55 Soviet tanks in UAR hands, they found no difficulty in knocking them out with either HESH or APDS fire. It has been reported that the T-54/55s generally held their fire until 1500m - or if they opened fire earlier it was so inaccurate as not to be a serious threat. Although the Israeli Air Force gave overall air cover to the armoured forces it is considered that only 20% of the UAR tanks were knocked out by aircraft, the remainder were either abandoned or destroyed by tank fire. A total of 660 UAR Tanks are stated to be lying in the Sinai desert out of an initial force of 900.



T-54 A

MOTOR TRANSPORT

Considerable numbers of Soviet "B" vehicles were captured from the Egyptians. All reported to date appear to be of the older GAZ-63, ZIL-164 and ZIL-157 variety. It is hoped that information on newer bloc vehicles will materialise as well as technical data on any specialised adaptations which may have been used to improve desert performance.

ARTILLERY

Preliminary reports and photographs indicate the capture of a number of artillery equipments including the 122-mm Howitzer D-30, the 14.5-mm ZPU-1 and the 57-mm S-60 anti-aircraft gun. In particular, the photography of the 122-mm Howitzer D-30 and 14.5-mm ZPU-1 has increased our knowledge of these two equipments considerably. The D-30 is discussed in detail on page 10 of this Review. The ZPU-1 has only been photographed once before and that was in 1956 when it was being used by the North Koreans. The Egyptian artillery, consisting of rocket launchers, guns, heavy mortars and air defence guns, appears to have caused considerable casualties amongst the Israeli troops at first and was effective against their aeroplanes. The equipment captured had been badly neglected and there were signs of a considerable lack of care and maintenance by the Egyptian gunners.



57-mm AA Gun S-60 (Soviet)

152-mm Gun Howitzer
M1937

ENGINEER

The Egyptian Army is known to have mainly Soviet Engineer Equipment, although Egyptian and Chinese mines are also held. Items captured from the Egyptians include mines, mine clearing rollers, mine laying devices and assorted pieces of plant. As far as is known, no bridging or engineer amphibious equipments were included in the captured stores. The technical characteristics of most of these equipments are already well known. It is not possible to give a reliable estimate of the overall performance of Soviet engineer equipment as a result of this campaign. However, it is reported that, although the TM-46 anti-tank mine is capable of knocking the track off a Centurion, the crew get no more than a shaking. The effectiveness of some minefields was reduced by the Egyptians forgetting, or not having sufficient time, to arm the mines, which as a result were merely crushed by Israeli tanks.

SIGNALS

Nothing new or exciting in the way of Soviet Signal Equipment was expected, and judging by the photographs and reports so far received, our pessimism was not ill founded. Press reports of a "complex communications vehicle", which turned out to be merely an R-104AM Radio Station in a GAZ-69 is a typical example of exaggeration by non-technical reporters. Full details of this equipment will be found on page 63 of MI Tech Review Supplement No. 78 of July 1965.



R-104AM Radio Station in GAZ-69

RADAR AND INFRA-RED

The PORK TROUGH Battlefield Surveillance Radar has been captured and displayed by the Israelis. Preliminary reports indicate this radar was captured from both the Egyptians and Syrians. It is the principle radar of its type in use with Warsaw Pact armies. Technical data received generally confirms our present assessment. To date no information has been received on infra-red systems, but in view of the vast number of AFVs and "B" vehicles lost by the Arabs this will no doubt change in the future.



Battlefield Surveillance Radar PORK TROUGH

CHEMICAL WARFARE

The UAR ability and willingness to use poison gas in war is already well known from their activities in the Yemen; it was therefore to be expected that they might use CW agents in their fight against Israel. Gas was not used in this war but a decontamination vehicle was amongst much equipment captured by the Israeli Army.

SURFACE TO AIR MISSILES

It has been known for some time that the UAR was equipped with the Russian made SA-2 SAM system which incorporates the GUIDELINE missile. As far as is known GUIDELINE caused no Israeli casualties in the recent war and it is by no means certain that any missiles were fired. Several GUIDELINES and their associated equipment were deployed East of the Canal and captured by the Israeli Army.

GUIDED MISSILES

The only systems involved were those that have been displayed publicly for several years, and the Russians do not appear to have exported any later systems yet. Egypt did not make use of her own missiles and this confirms the assessment that the development programme for these is far from complete. There is no information about the use of anti-tank guided missiles by either side, but the Israelis have captured some SNAPPER missiles and equipment from either the UAR or SYRIA. Previous assessments are unlikely to change but more information on accuracy, reliability and detailed design may be obtained.



SNAPPER Missiles on GAZ-69

2. 122-mm Howitzer D-30 (SECRET)

A by product of the recent successful Israeli operations against the Egyptians, has been the capture, as indicated in the press, of a certain amount of Soviet equipment.

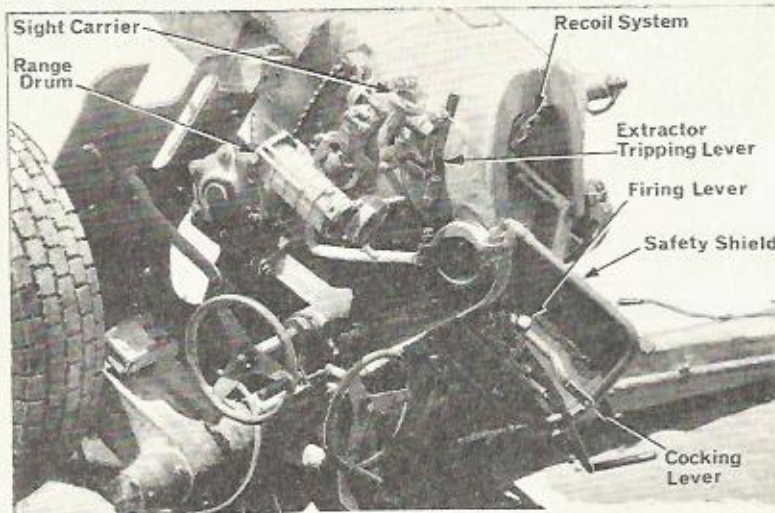
From the artillery point of view the most interesting find was the 122-mm Howitzer D-30. Several photographs of it taken by the MA in Tel Aviv are enclosed in this article and show for the first time details of the breech end of the howitzer. The photographs also give us a better idea of the operation of the jack, the trails and the wheel lifting mechanism.



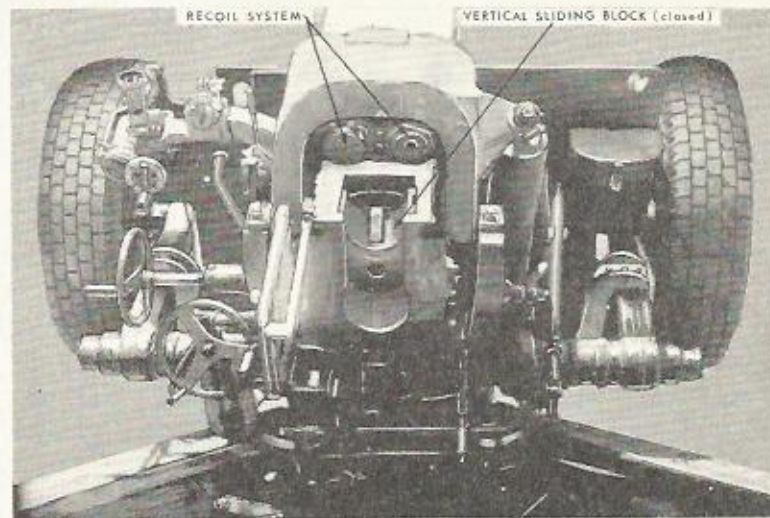
122-mm Howitzer D-30

The photograph above shows the howitzer in action. It rests mainly on the central jack, stability being provided by the trails. Normally the pickets seen attached to the left hand trail would be driven into the ground. On the centre or fixed trail can be seen the clamping frame, which secures it to the barrel when the howitzer is on tow; the two moveable trails are secured to the fixed trail by a strainer assembly. On this model the lunette bar or towing eye is attached to the muzzle brake but on later models is attached to the barrel. Presumably the strain on the muzzle brake was too great.

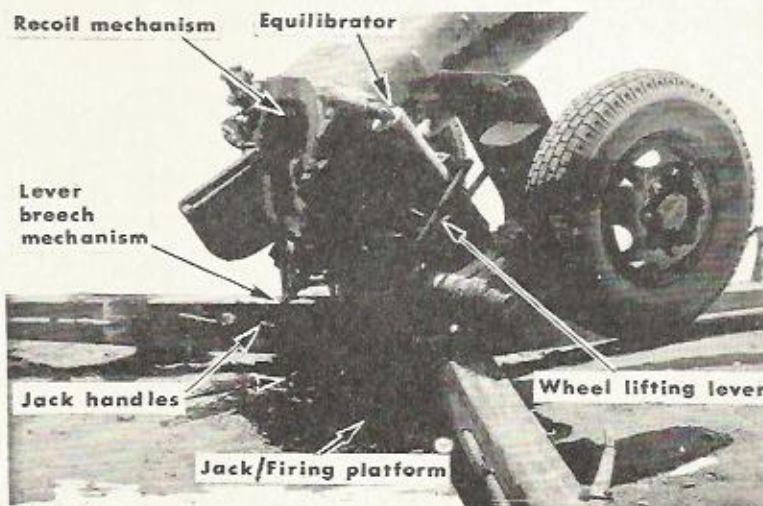
The top and centre photographs on page 11 show the sight carrier, range drum, elevating and traversing hand wheels, and the firing lever. The recoil system can be seen above the breech which is in the closed position.



122-mm D-30
Sight and Firing lever

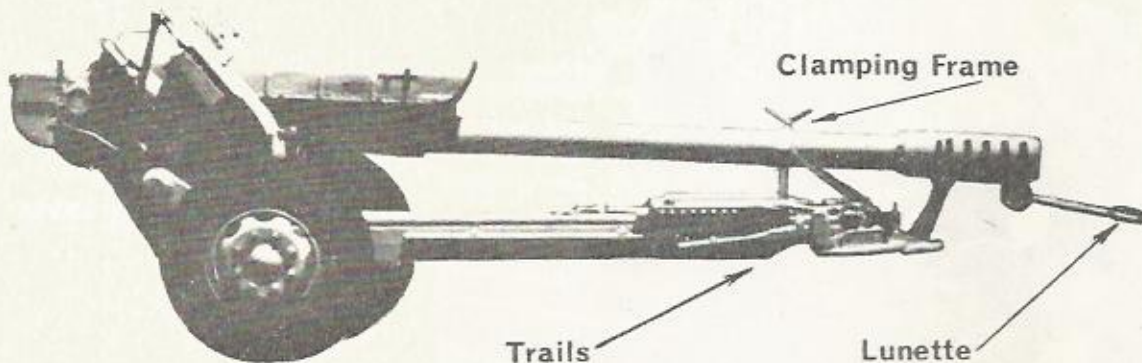


122-mm D-30
Recoil System



In this photograph the equilibrator, lever breech mechanism, the two jack handles for raising and lowering the jack and the lever for actuating the wheel lifting mechanism are clearly distinguishable. The lever is carried in this position during firing.

122-mm D-30
Breech Mechanism



122-mm D-30 in towed position

To bring the howitzer into action from the towed position, shown above, the barrel clamp is released and the barrel elevated. The howitzer is then jacked up and the two moving trails opened out until the three trails are at 120° to each other. The wheels are raised next and lastly the howitzer is lowered using the jack, the base of which then becomes the firing platform. It is stated that this operation takes $2\frac{1}{2}$ minutes. The drill is complicated and it must be hard work.

The main assets of this type of carriage are that it is light and provides 360° top traverse from -5° to $+18^\circ\text{E}$, so the howitzer can be employed as an effective anti-tank and direct fire weapon, using either HEAT or HE ammunition as required. Between the trails the barrel may be elevated from -7° to $+70^\circ\text{E}$.

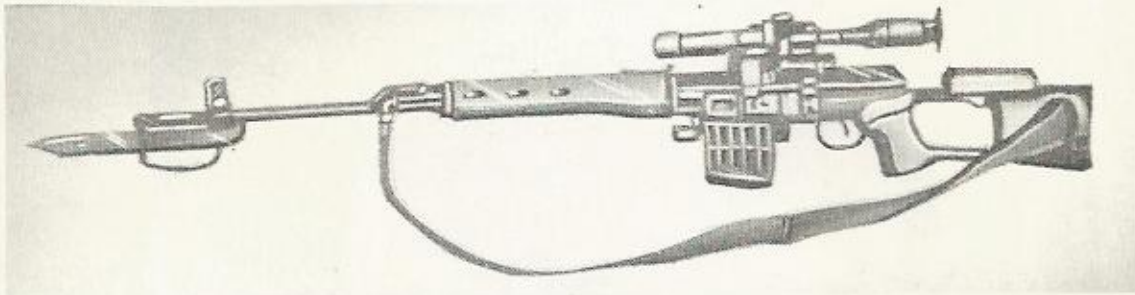
Main Characteristics

Max Range	15,300 m
Shell Weights	
HE	48 lb
HEAT (fin stab)	31 lb
(spin stab)	48 lb
Standard MV	690 m/s
Armour penetration at 0°	- 458 mm (est)
Max Rate of Fire	6-8 rpm
Overall Weight	7000 lb

3. The DRAGUNOV Sniper Rifle (CONFIDENTIAL)

SVD 7.62-mm Semi-Automatic Sniper Rifle DRAGUNOV

Reports indicate the existence of a new Soviet sniper rifle designed to replace the 7.62-mm rifle MOSSIN-NAGENT M1891/30. At first sight this new weapon appears to be similar to the AKM but there are a number of important differences viz the barrel is longer, the magazine holds ten rounds, it has a four times telescope and built-in cheek pad, and fires the M1908 long rimmed cartridge.



DRAGUNOV Sniper Rifle SVD

Technical Details

Fairly full technical details are held by Tech Int (A) and only the more important are listed below:

Length (without bayonet)	1.22 m	(48.3 in)
Weight (without bayonet)	4.3 kg	(9.5 lb)
Magazine capacity	10 rounds	
Effective range	up to 800 m	(875 yd)
Practical rate of fire	30 rpm	
Telescopic sight		
Field of view	6°	
Power	4 times	
Types of ammunition		
Ball		
Tracer		
API		
Operation	Gas pressure	

One report, as yet unconfirmed, claims that the DRAGUNOV has an IR capability. This might detect passively hostile use of active IR equipments and may provide a means to counter such devices by aimed fire. The provision of IR with the weapon would generally improve Soviet night fighting capability.

Comment. Sniper weapons have an important tactical role in the Soviet Army. Special schools conduct sniper training and snipers are believed to be an integral part of the Soviet motorised rifle company. The DRAGUNOV is therefore an important addition to the Soviet small arms family.

4. The PMN Mine (CONFIDENTIAL)

Soviet PMN Anti-Personnel Mine

Review No 84 gave details of a new Chinese anti-personnel mine. This is now known to be an exact copy of the Soviet PMN Anti-Personnel Mine, which has recently appeared on the borders of East Germany. Further details are now available about this plastic mine.



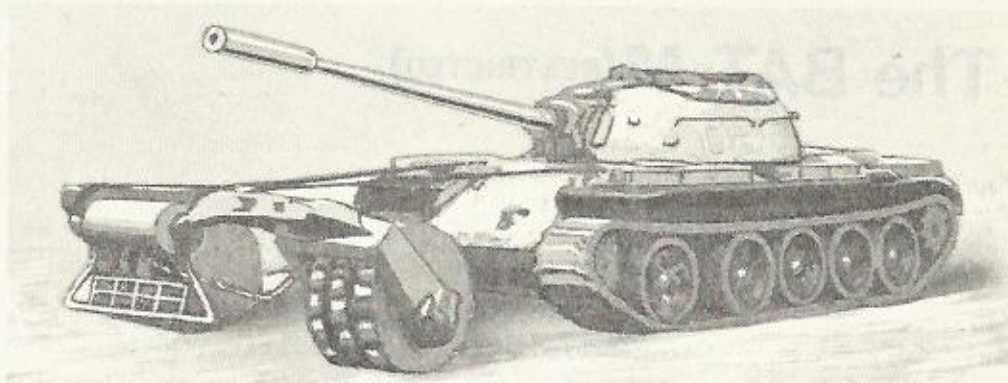
Technical Data

a. Dimensions			
Body Diameter	109.9 mm	(4.3 in)	
Height	54.61 mm	(2.1 in)	
b. Weights			
Empty	378 gm	(8.7 oz)	
Explosive (main charge)	218 gm	(5 oz)	
Delay Arming Time at 25°C	12 min 30 sec		
Actuating load at 25°C	230 gm	($\frac{1}{2}$ lb) (approx)	

5. Mine Clearing Roller (CONFIDENTIAL)

Czech Mine Clearing Roller Mounted on a T-54 Tank

A recent article in a Czech publication (Vojenska Technika No 11/1966) describes mine clearance by rollers. The article is illustrated with a photograph of a T-54-mounted mine clearing roller. The caption claims that the equipment is in service with the Czech Army.



The rollers differ from the Soviet models in several important respects. Although the illustration is not as clear as it might be, the following points are of interest:-

- a. The rollers only have three discs each.
- b. The mounting consists of a single T frame.
- c. Each roller is attached to the T frame by a trailing U bracket.
- d. There is a small drum or roller mounted forward of the main rollers together with a metal lattice. This may be a device which can be lowered to clear anti-personnel mines and tilt fuzed mines from between the main rollers.

The whole device looks more massive and cumbersome than the standard PT-54. It may indicate that the PT-54 has not lived up to expectation and the Soviet Bloc countries are looking for a more robust equipment.

6. Czech Amphibious Trailer (SECRET)

Recent reports and photography from Czechoslovakia have indicated that the Czech Army is about to bring into service an amphibious trailer to be used in conjunction with the OT-64 APC.

The trailer is shaped somewhat like a bridging pontoon, made of metal and supported on four wheels.

Technical Data (Dimensions)

Length (overall)	5.75 m (18.75 ft)	Wheel Base Length	3.4 m (11.1 ft)
Width (overall)	2.7 m (9.6 ft)	Estimated Load Capacity	10 men or
Height (overall)	2.0 m (6.5 ft)		2000 lb



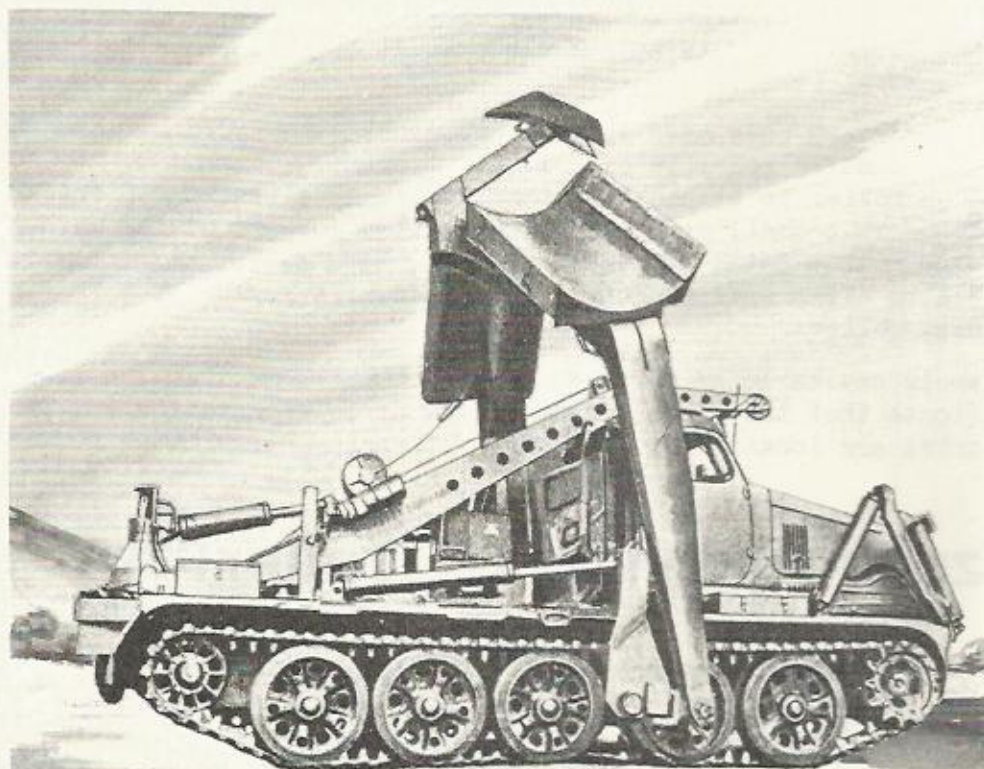
Amphibious Trailer

7. The BAT-M (RESTRICTED)

BAT-M - Engineer Version of AT-T

The Soviets have recently introduced a new version of the BAT, which has been seen in the Soviet Union and East Germany.

The new version is called the BAT-M by the East German press. The improvements include an all hydraulic system for operating the dozer blade and crane. It is thought that an air filtration system is provided for the driver's cab.

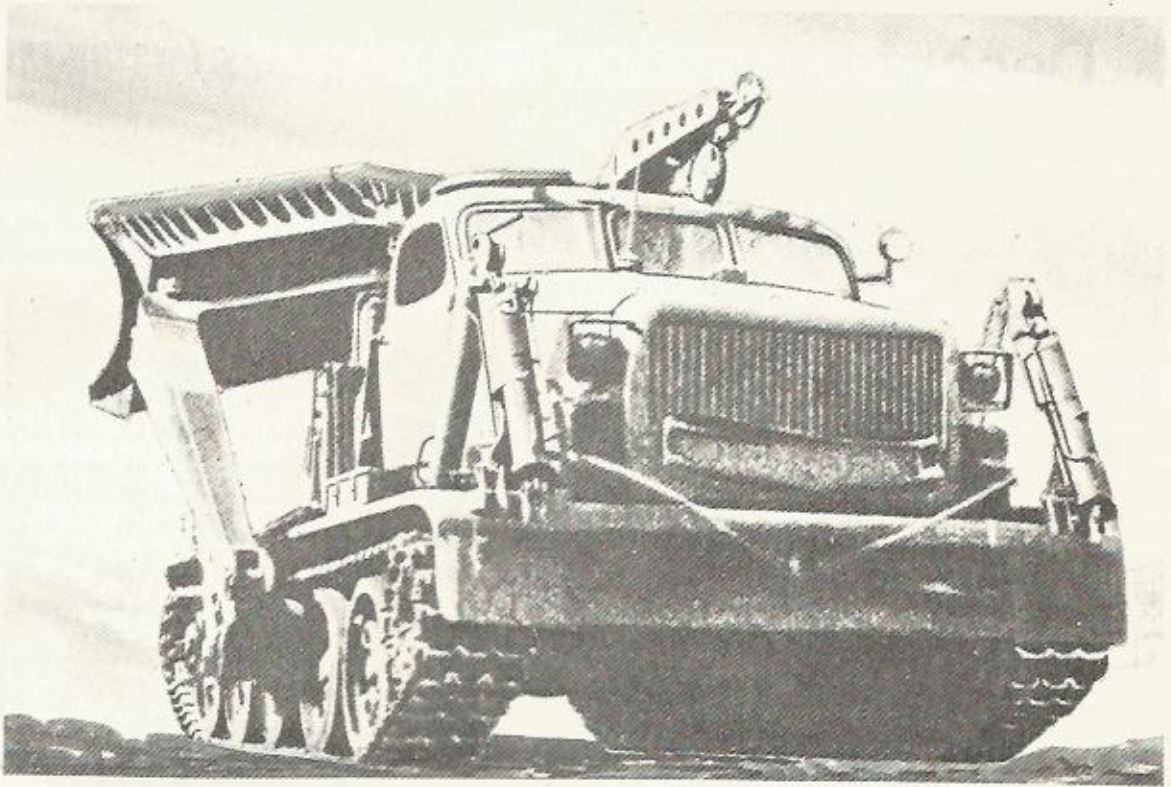


BAT-M in travelling position

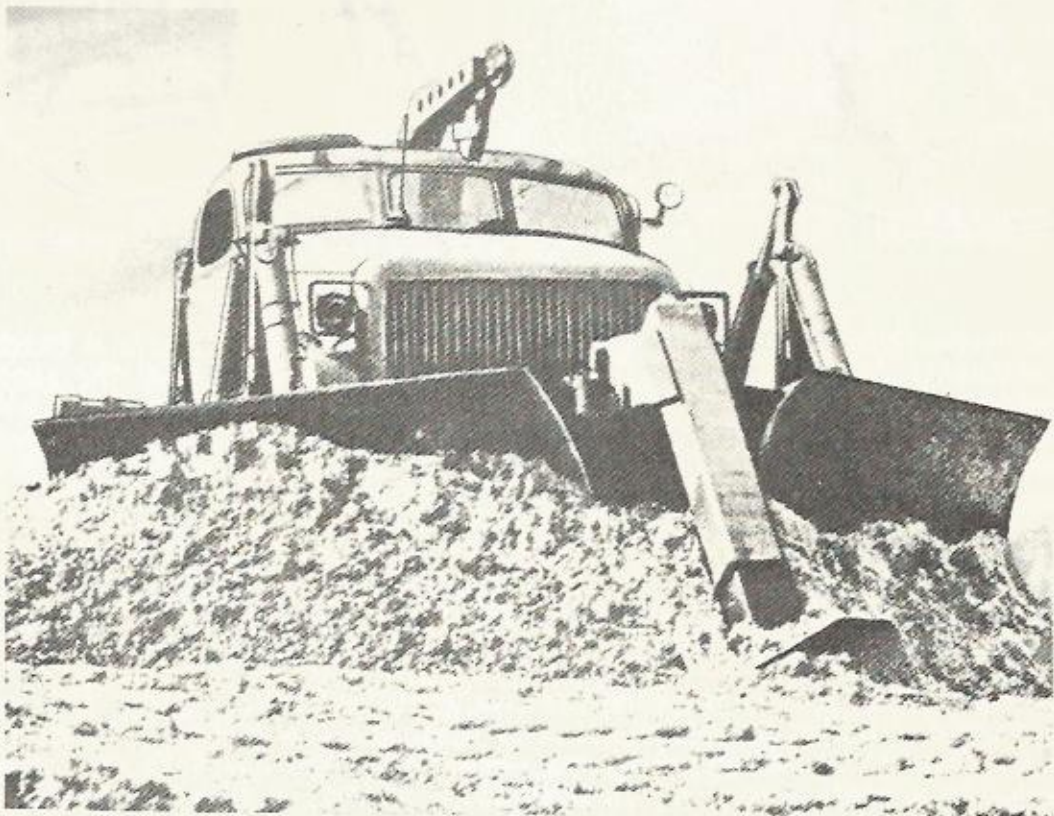
This illustration shows the BAT-M with the dozer-blade in the travelling position. It was found that this position gave the machine better balance and made driving easier. The crane has a 360° traverse and a maximum elevation of about 70°. An "idiot shoe" is fitted to the front of the blade to assist less experienced operators.

Technical Data

Chassis	AT-T
Weight	25,000 kg (24 tons)
Operating Speed	1.5 - 10 kph (1-7 mph)
Dozing output	120-400 metres ³ /hr (156-520 cub yd/hr)
Crane Load (Max)	2000 kg (4400 lb)



BAT-M with Dozer Blade swung to rear



BAT-M Working

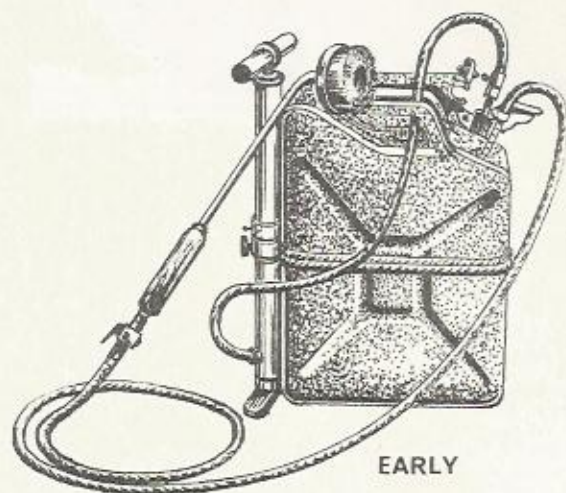
8. Decontamination Techniques (RESTRICTED)

Introduction

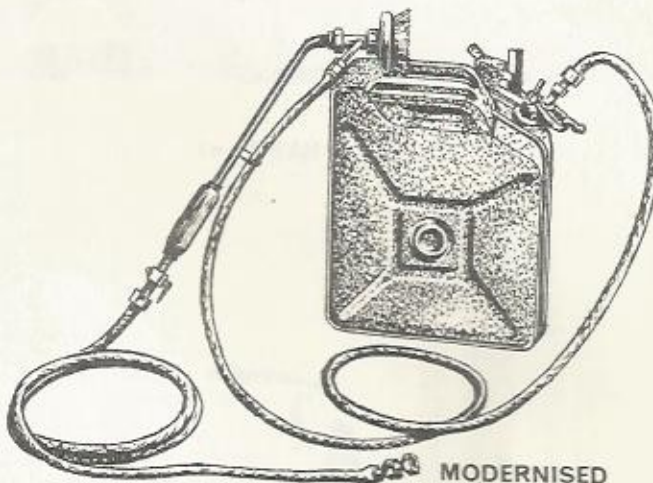
Soviet Chemical and Biological capabilities were fully described in Army Technical Intelligence Review Supplement No. 79, published in October 1965, which is still a useful guide. This article describes two later developments in decontamination techniques, and should be read in conjunction with that Supplement.

The DK-1

Early Version. The early version of this decontamination equipment consists simply of a jerrican-type container filled (16-18 litres) with decontaminant liquid and manually pressurised by a handpump attached to it. The liquid is then forced out through a hose, atomiser nozzle and brush system connected to the container. The required working pressure is 1 atmosphere, which can be produced by 8-10 strokes of the pump. An adapter enables the required pressure to be produced from a vehicle tyre-compressor system.



EARLY



MODERNISED

Modernised Version. This version of the DK-1 does not require a hermetically sealed container and any open container may be used. Instead of the container being pressurised, the hose is connected directly to the vehicle tyre pump system and the decontaminant is drawn out of the container by another hose connected just behind the brush head. This probably gives increased safety, more flexibility and greater performance.

The DK-2 & 3

These two kits are basically sets of hoses, adaptors, attachments and distributors enabling ordinary fuel, water or oil bowser vehicles to be used for general decontamination tasks.

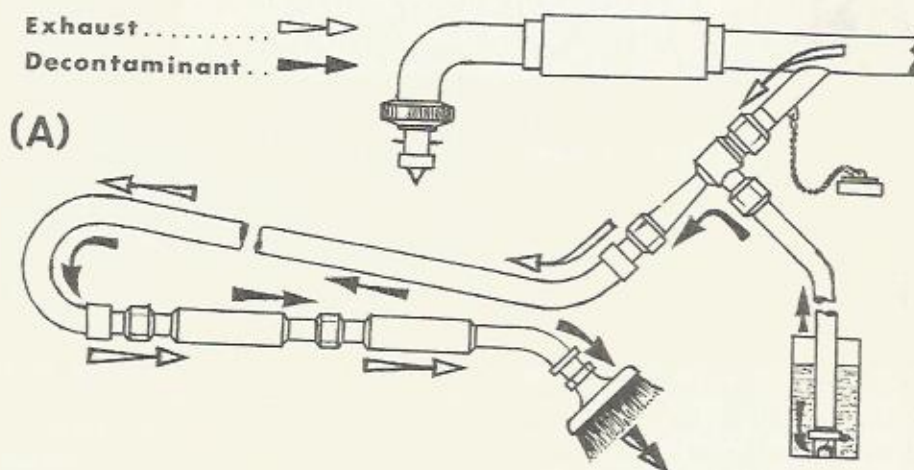
DK-2. The DK-2 kit is intended for use with the KPN-1, KPN-2, MMZIL-164 and PAAS-15 vehicles in the decontamination of aircraft and airfield maintenance equipment. The kit is contained in two metal boxes and consists of: 4 thirty metre hoses on a reel, 6 nozzles (2 long and 4 short), a four nipple distributor, reducing couplings, 6 brushes, 4 spray attachments, a scraper, a handle for turning the hose reel, and a box of fittings and spare parts.

DK-3. The DK-3 kit is intended for use with the ATZ-3-157 and ATZ-3-151 fuel service trucks, the ATsM-4-150 fuel tank truck, and the VMZ-157 water and oil truck in the decontamination of military vehicles and equipment. It is contained in a single metal box and consists of: 2 ten metre hoses, a two nipple distributor with a reducing coupling and cap, 2 nozzles with extension pieces, 2 brushes, 2 spray attachments, a hand scraper and a box of fittings and spare parts.

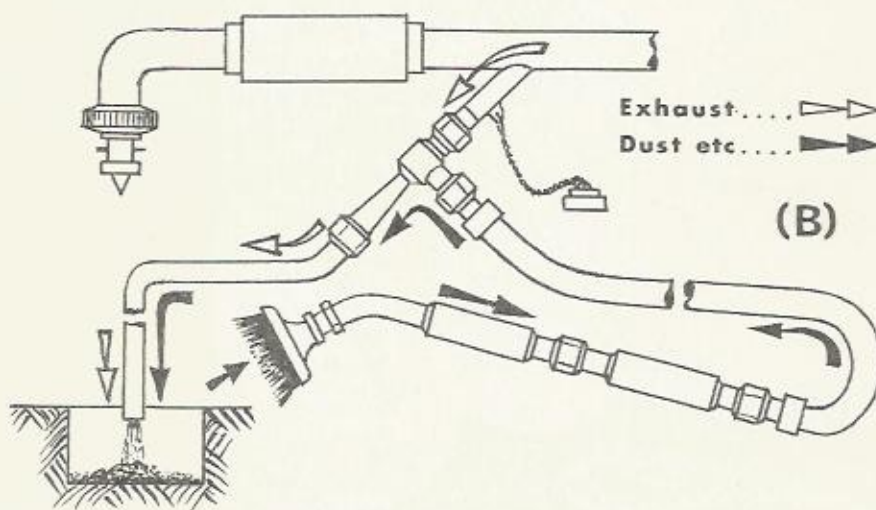
The DK-4

The DK-4 decontamination set uses the exhaust gases of either a vehicle or tank to make a liquid spraying device or a vacuum cleaner (for the removal of radio active dust). It is necessary to modify the exhaust system by welding a branch pipe into it before the DK-4 decontamination system can be used.

Method of Operation

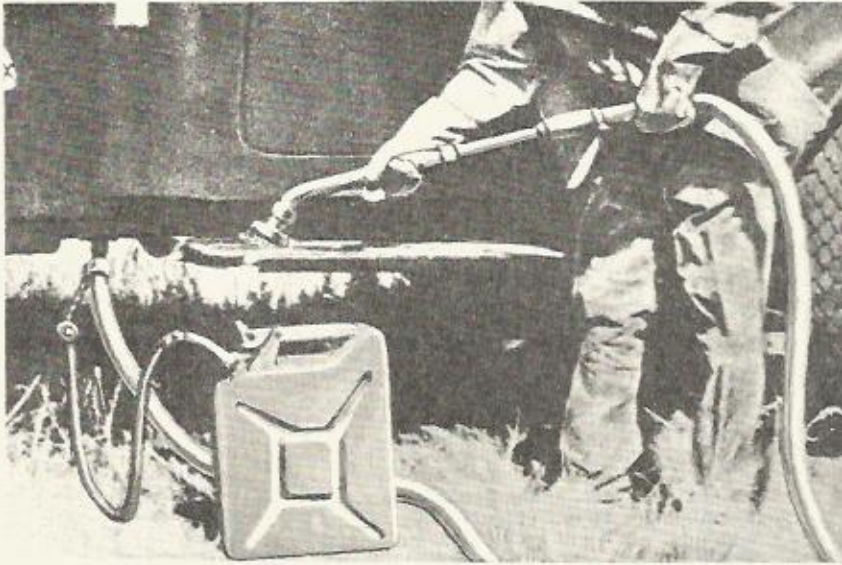


(A) Liquid Sprayer. The connection necessary to use as a sprayer



(B) Vacuum Cleaner. Connected up for use as a vacuum cleaner

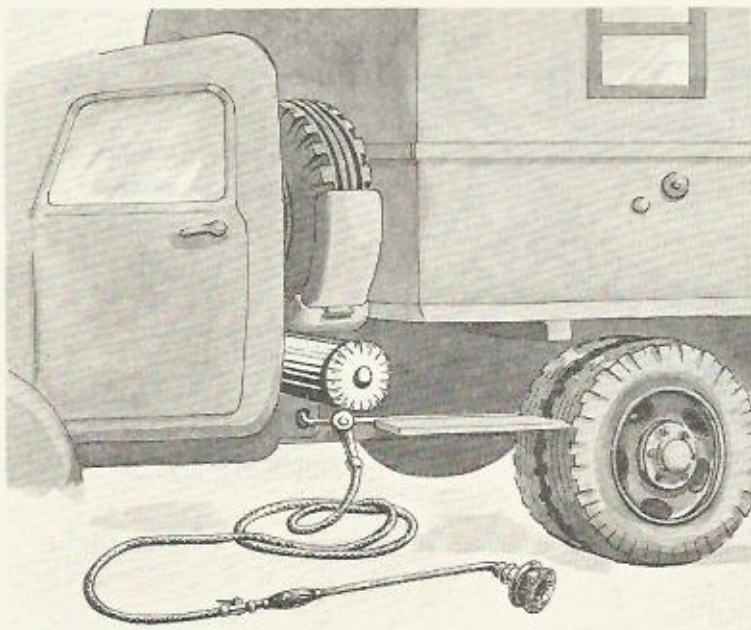
The DK-4 is shown in use on page 20.



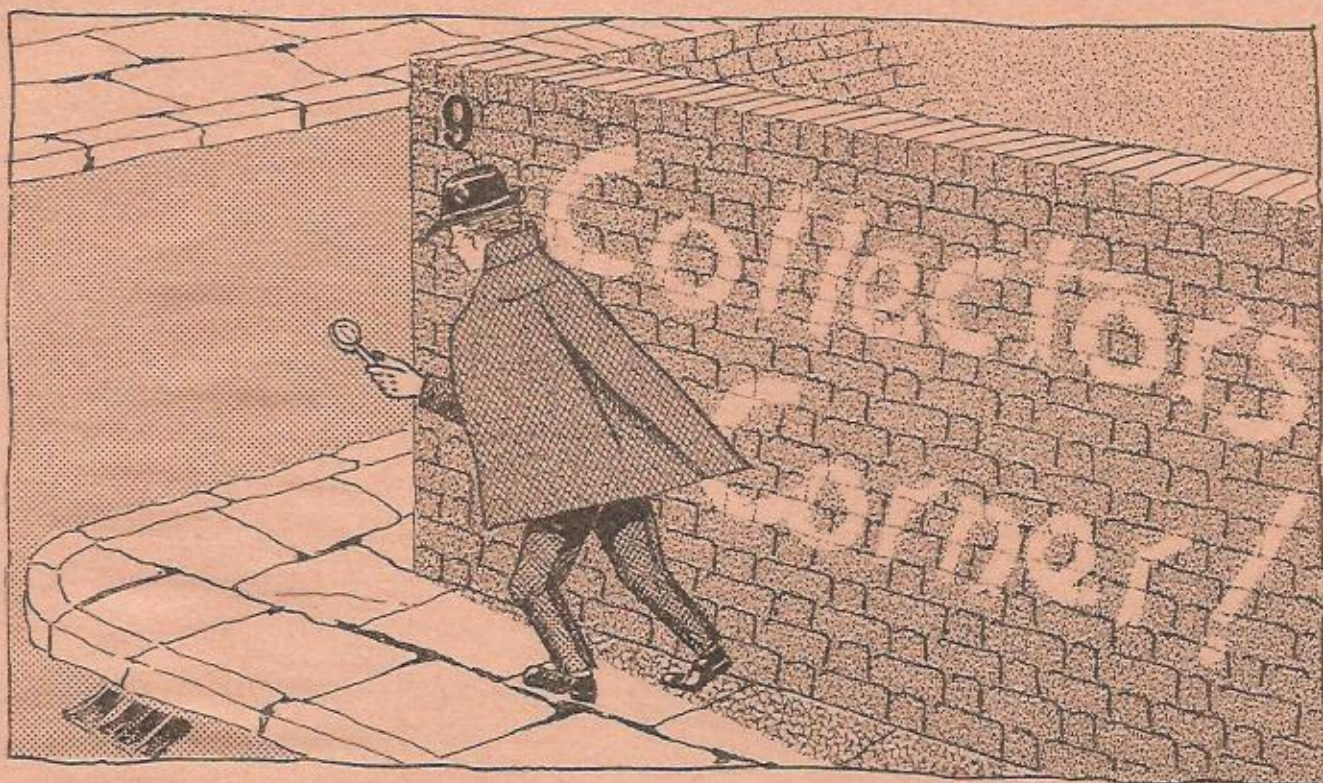
DK-4 in use

The EEA-61

The EEA-61 decontamination unit can be permanently fitted to vehicles with air pressure brakes. The EEA-61 is worked by compressed air forcing liquid from a container out through a delivery pipe which has a spray jet and small circular broom at the end. Two liquid containers are mounted, so two different liquids can be used simultaneously. The EEA-61 is shown mounted on a ZIL-157 truck.



EEA-61 mounted on ZIL 157



Infra Red on Soviet DRAGUNOV (SVD) Sniper Rifle

1. The Soviet Army has a new Sniper Rifle known as the DRAGUNOV (SVD). Fairly complete details including photographs are held. Reference has been made to an IR capability but no information on this aspect is available.
2. We want to know whether the Soviets intend to use their present standard active aiming device or a new passive sniperscope similar to those being developed in the West.

122-mm Howitzer D-30

3. A considerable amount of information has been obtained about this weapon. The only information now required is:
 - a. Range Tables,
 - b. Gun drill,
 - c. Information on examples of ammunition especially the HEAT round.